**Before the**
**Federal Communications Commission**
**Washington, D.C. 20554**

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| In the Matter of | ) | |
| | ) | |
| Rural Digital Opportunity Fund | ) | WC Docket No. 19-126 |
| | ) | |
| Connect America Fund | ) | WC Docket No. 10-90 |

# REPLY COMMENTS OF ADTRAN, INC.

Stephen L. Goodman
Stephen L. Goodman, PLLC
532 North Pitt Street
Alexandria, VA 22314
(202) 607-6756
stephenlgoodman@aol.com

Counsel for ADTRAN, Inc.

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## SUMMARY

In its comments, ADTRAN supported use of a reverse auction as a means of selecting which service providers will be subsidized to deploy broadband service to rural areas, but emphasized that the auction must be structured so that the value is maximized, not merely that the lowest price is obtained for presently "acceptable service." ADTRAN also urged the Commission to strengthen the performance monitoring and enforcement mechanisms to ensure that the promised services are actually delivered, including adding crowdsourcing and whistleblower provisions to the mechanisms. Other commenters agreed with ADTRAN on the importance of getting the weights right, and adopting a strong enforcement regime. ADTRAN also urged the Commission to apply a significant weight to high-latency services because the high-latency adversely affects or limits many critical applications that a subscriber can use. Several other commenters concurred.

In contrast, several satellite service providers argued that the Commission was proposing to assign too much weight to high-latency services. The satellite providers' focus simply on the proportion of traffic carried today that would be adversely affected by high latency ignores the criticality of the traffic that will be affected. Moreover, the satellite providers' claim of satisfied customers is based on a comparison to inadequate terrestrial broadband services to which rural customers frequently have access presently, not to the robust broadband services the RDOF seeks to deploy. In addition, applying the significant weights does not violate the goal of technological neutrality, given the significant differences between high- and low-latency services. ADTRAN also explains why the Commission's proposals are consistent with ITU standards. Finally, ADTRAN addresses miscellaneous arguments raised by commenters, including explaining why the Commission should reject proposals to eliminate the stand-alone voice requirement, award RDOF subsidies in multiple tranches, or allow service providers two years to come into compliance with increased usage allowances.

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REPLY COMMENTS OF ADTRAN, INC.

ADTRAN, Inc. ("ADTRAN") takes this opportunity to address several of the issues raised in the comments on the Commission's Notice of Proposed Rulemaking regarding the Rural Digital Opportunity Fund ("RDOF").[1] In its comments, ADTRAN lauded the Commission for these efforts to expand broadband service to the unserved and underserved rural territories. ADTRAN suggested some changes to the proposed reverse-auction mechanism to ensure that value was maximized. In addition, ADTRAN recommended that the Commission adopt robust performance measurement and enforcement mechanisms to ensure that the subsidized broadband services are compliant with the Commission's requirements. As explained herein, other commenters share ADTRAN's positions. On the other hand, to the extent that some of the other commenters took positions inconsistent with ADTRAN's, we explain why those commenters are wrong or misguided.

***Maximizing Value through a Reverse Auction***

ADTRAN supports use of a reverse auction as a means of selecting which service providers will be subsidized to deploy broadband service to rural areas. But that auction must be

[1] *Rural Digital Opportunity Fund,* FCC 19-77, 84 Fed Reg 43543 (August 21, 2019) (hereafter cited as "*RDOF NPRM*").

structured so that the value is maximized, not merely that the lowest price is obtained for presently "acceptable service." This is particularly important in light of the proposed ten-year term for subsidies under the RDOF program. Other commenters concur.

In supporting the proposed performance tiers and weighting factors, the Utilities Technology Council observed:

> In combination, these modifications to the performance tiers and the weighting factors are necessary to prevent bids for projects with marginal broadband services from winning a significant amount of the available funding, which was one of the unfortunate results of CAF II. Moreover, it will promote the deployment of broadband networks to enable a variety of important applications (not just Internet access), such as voice, telehealth and smart grid, which will provide significant public interest benefits, but which would not be supported using 25/3 Mbps or high latency services.[2]

Similarly, ACA Connects indicated that: "In particular, it is vital in light of the lengthy (10-year) support term proposed in the *NPRM* for the RDOF that the Commission adopt rules that account fully for the benefits of higher-performance broadband networks which consumers will require."[3]

> Along a similar vein, NTCA–The Rural Broadband Association explained:
>
> Put another way, while it may be more attractive on its face to aim for lower speeds at lower upfront cost, it would be far more efficient and effective for the Commission – and, ultimately, for the American ratepayer who contributes to universal service – to invest in networks that will remain relevant and reliable for the entire term of support and beyond.[4]
>
> NTCA–The Rural Broadband Association ("NTCA") also explained:
>
> For an analogy that rings true in the infrastructure space, departments of transportation do not build two-lane roads when they can foresee that an eight-lane highway will be needed in the future, precisely because the costs and disruption of rebuilding a road multiple times over is inefficient and will ultimately exceed the cost of doing it right the first time.[5]

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[2] Utilities Technology Council Comments at p. 10.

[3] ACA Connects Comments at pp. 2-3.

[4] NTCA–The Rural Broadband Association Comments at p. 9.

[5] NTCA Comments at p. 13.

The Fiber Broadband Association likewise indicated in their comments that for the RDOF, the Commission should modify the weights assigned to the different speed tiers in the CAF II auction to better reflect the value of the different services.[6] And Incompass also argued that the weights assigned to the different service tiers should encourage gigabit service, particularly given the ten-year term and the accelerating demand for broadband.[7]

In maximizing the value of the RDOF "investment" in deployment of broadband networks, the Commission should also take into account the positive externalities that can be generated by deployment of gigabit networks. As INCOMPAS observes:

> With respect to accounting for broadband capabilities, INCOMPAS supports the Commission increasing the weight for baseline and high latency services appropriately (to a total of 95 or above) in order to account for consumer preferences, the positive externalities associated with terrestrial, fixed broadband services that increase fiber deployment, and local investment in rural areas that will also support mobile networks.[8]

And as Windstream states: "Critically, the Commission must take steps to ensure that our 5G future is strengthened and not weakened by RDOF. This will require that the Commission take crucial steps to incentivize high-speed terrestrial infrastructure that will have a lasting, positive impact on rural America."[9]

The Rural Anchor Institution Supporters advocate that the Commission should

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6 Fiber Broadband Association Comments at pp. 6-12.

7 INCOMPAS Comments at pp. 6-10.

8 INCOMPAS Comments at p. 12.

9 Windstream Comments at p. 3. *See also*, USTelecom Comments at p. 21 ("Funding satellite broadband through the Rural Digital Opportunity Fund will not lead to any new backhaul investments in rural America, and it will have no spillover benefits, including job creation, in the process of deploying new futureproof infrastructure.").

"recognize the importance of community anchor institutions by specifically requiring recipients of RDOF funding to deploy high-quality broadband to the anchor institutions in their service areas."[10] ADTRAN agrees with the important role of anchor institutions, but their request to address connections to those institutions in the RDOF program highlights the need for the Commission to view its different broadband subsidy programs holistically, because the Rural Healthcare Fund and the Schools and Libraries Fund currently subsidize broadband connectivity to anchor institutions.[11] Fostering the deployment of gigabit networks in rural territories advances the goals of all of these Commission broadband subsidy programs, and the Commission should take advantage of the synergies and positive externalities.

In contrast, Viasat contends that the Commission can only consider the broadband service offerings to retail end users in designing the RDOF program.[12] But such a myopic view makes no sense, because the Commission should be attempting to maximize the value of the RDOF program, not simply seek to obtain the lowest price for presently acceptable end-user broadband service. Indeed, turning a blind eye to the positive externalities would be uneconomic and irrational.

Other commenters suggest that the Commission should set the weights for the auction to compress the maximum difference between the lowest and highest performance tiers, rather than encouraging deployment of faster networks. US Cellular suggests that "The fact that only 0.25% of the winning bids were at the lowest 10/1 tier strongly suggests that the FCC's weighting was

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[10] Rural Anchor Institution Supporters Comments at p. 7.

[11] In addition, as NTCA observes, the Commission should also harmonize the RDOF program with the Department of Agriculture's ReConnect program. NTCA Comments at pp. 19-20.

[12] Viasat Comments at p. 20.

incorrect, because those who bid at the minimum performance tier were not able to 'place competitive bids.'"[13] And US Cellular urges the Commission "to narrow the weighting spread, to be sure that the lowest tier gets a minimum of 5-10% of the funding opportunities. Phase I of RDOF, the first $16 billion, should be all about getting as many people up to ***a decent speed*** as quickly as possible."[14] In a similar vein, WISPA urges the Commission to change the weights for the performance tiers to compress the maximum difference between highest and lowest performance tiers, noting that most customers do not presently subscribe to gigabit service.[15]

ADTRAN disagrees. In light of the long time-horizon for the RDOF program, ADTRAN believes the Commission should seek to foster more robust broadband, and the 25/3 Mbps baseline benchmark, while adequate presently, will not likely be sufficient over the entire ten-year term. The Commission should strive to provide rural communities with more than just "decent speed" at the lowest price – the Commission should design the RDOF program to maximize the value, including the positive externalities generated by gigabit networks.

***Strengthening Performance Measurement and Enforcement Mechanisms***

In its comments, ADTRAN urged the Commission to design the RDOF program to ensure that the actual performance of the subsidized broadband networks meets the requirements specified with regard to the quality, speed and usage allowances. ADTRAN thus urged the Commission to adopt a robust performance measurement program and an effective enforcement system. ADTRAN suggested two enhancements to the Commission's proposals to achieve these goals – "crowdsourcing" to trigger additional scrutiny, and whistleblower regulations that would

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13 US Cellular Comments at p. 6.

14 US Cellular Comments at p. 8 (emphasis added).

15 WISPA Comments at pp.12-14.

reward informants for providing information on violators.[16]

Other commenters similarly urged the Commission to make sure that the broadband service providers meet their obligations throughout the ten-year term of the RDOF support. As the Utilities Technology Council explains, "the Commission should establish enforcement mechanisms that incent winning bidders to meet their performance requirements … this will help ensure that consumers in unserved areas receive the quality of services that they need at affordable prices."[17] And as NTCA observes:

> The ultimate objective articulated by the law, as noted above, is to ensure that rural and urban Americans alike have access to reasonably comparable services at reasonably comparable rates. Thus, the job is hardly finished once a network is built – the mission of universal service is ongoing, with the statutory mandate being realized only as consumers in rural America are able to make use of services like their urban counterparts.[18]

ADTRAN agrees – RDOF subscribers should not be short-changed.

***The Proper Weighting that Should Apply to High-Latency Services***

In its initial comments, ADTRAN urged the Commission to apply a significant weight to high-latency services because the high-latency adversely affects or limits many critical applications that a subscriber can use.[19] ADTRAN thus suggested that the Commission adopt its alternative proposal of a 95-point spread between the highest and lowest service tiers, and to do so by increasing the weight of the high latency service from 40 to 50, while decreasing the weight for the baseline speed from 50 to 45. Other commenters took similar positions.

ITTA – The Voice of America's Broadband Providers ("ITTA") suggested that the

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16 ADTRAN Comments at pp. 11-14.

17 Utilities Technology Council Comments at p. 8.

18 NTCA Comments at pp. 26-27.

19 ADTRAN Comments at pp. 8-10.

Commission assign a weight greater than 40 to high-latency services.[20] Windstream indicated that: "The Commission has proposed to assign a weight of 40 points to any bid that would deploy service with latency above 100 ms. The weight should be increased to 45 points at minimum."[21] Likewise, USTelecom observed that:

> While satellite broadband may be appropriate for those truly hardest-to-serve areas, it must be recognized that satellite broadband service is not a bridge to next generation broadband services. Funding satellite broadband through the Rural Digital Opportunity Fund will not lead to any new backhaul investments in rural America, and it will have no spillover benefits, including job creation, in the process of deploying new futureproof infrastructure. …Accordingly, USTelecom recommends that, if the Commission decides not to exclude satellite from bidding in Phase I of the Rural Digital Opportunity Fund, it should, at a minimum, enhance the high-latency tier weighting to appropriately recognize the narrower set of benefits that come with satellite broadband.[22]

And Verizon suggested that:

> The RDOF program should focus on terrestrial broadband deployment because low-latency terrestrial broadband service "is essential for most network-based applications and critical for others, such as VoIP and other interactive and highly interactive applications." By contrast, as the Commission has found, high-latency satellite broadband has "inherent limitations,' particularly for 'interactive, real-time applications and voice services given that high latency providers may be the only voice providers in the area."[23]

Thus, there is substantial support in the record to increase the weight assigned to high-latency services.

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[20] ITTA Comments at p. 19.

[21] Windstream Comments at p. 12 (citation omitted).

[22] USTelecom Comments at p. 21.

[23] Verizon Comments at p. 4 (citations omitted). Verizon also contends that: "If the Commission permits satellite broadband providers to bid for some or all eligible census blocks, it should increase the high-latency tier weight from 25 to at least 40." *Id.* at p. 6. In contrast, NTCA suggests a slight decrease in the weight assigned to high-latency services, but their suggestion is based on "presuming that improved latency would be ensured in the form of a relatively lower (but still high) millisecond threshold and that greater clarity will be established surrounding how such latency will be measured." NTCA Comments at p. 12.

***Responding to the Satellite Service Providers' Arguments for Reducing the High-Latency Weighting***

Several satellite service providers argued against the Commission's proposal to increase the weight assigned to high-latency services over the level assigned during CAF II, and instead reduce the assigned weight. Those satellite service providers' claims, however, are not well justified. ADTRAN thus continues to urge the Commission to adopt the alternative proposal of a 95-point spread between the highest and lowest service tiers, and to do so by increasing the weight of the high latency service from 40 to 50, while decreasing the weight for the baseline speed from 50 to 45.

Several of the satellite service providers argue that the Commission proposes to apply an excessive weight to high-latency broadband, because latency-sensitive services make up only a small proportion of Internet traffic.[24] However, the satellite providers' focus simply on the proportion of traffic carried today that would be adversely affected by high latency ignores the criticality of the traffic that is affected. The satellite providers' argument relies on a false equivalency between the volume of traffic used by an application and its importance to the user. To use their same logic on a different topic: data show that the vast majority of mail delivered to

[24] Hughes Comments at p. 4 ("Latency should not be heavily weighted in evaluating bids because latency does not have a significant negative impact on consumers' day-to-day usage of broadband services. … Data show that the vast majority of consumer Internet traffic consists of non-latency sensitive applications including video downloads, web browsing, and email."); Viasat Comments at p. 18 ("The evidence thus shows that *significantly less than 10 percent* of online traffic—and likely closer to *5 percent* of traffic—is even relevant for purposes of any potential latency-related penalty.")(emphasis in original); Pacific Dataport Comments at p. 15 ("While the Commission has long insisted on low latency as a critical requirement for rural broadband support, PDI challenges the Commission to justify this position, when according to independent studies and industry experts, no more than 5% to 10% of all Internet applications are latency sensitive."); SES/O3b Comments at p. 3 ("Many critical broadband-enabled applications are not latency-sensitive, such as video streaming, web browsing, social media, and email, which makes GSO connectivity an important option for supporting broadband service, particularly in rural and hard to reach locations.").

consumers is bulk mail and advertisements, therefore First-Class mail is not important. In fact, the broadband services and applications that are adversely affected by high latency would make it impossible for telecommuting, and also adversely affect web-browsing, interactive services such as gaming, and over-the-top VoIP. While the majority of Internet traffic currently is video downloads, which is not significant affected by high-latency, broadband connectivity needs to be more than watching movies and TV shows. But even for video downloads, the satellite broadband monthly usage limits -- and soft limits (*e.g.*, de-prioritization of traffic or rate limiting after some lower threshold is exceeded[25]) -- will constrain video viewing. The Commission thus correctly proposes to assign a significant weight to high-latency services.

The satellite service providers also challenge the proposed high-latency weights by claiming that the quality of satellite broadband service is the same as terrestrial broadband service.[26] To the extent that the satellite service providers rely on customer satisfaction to establish equivalency, those comparisons are based on the alternatives that rural customers currently have. It is not surprising that rural customers would be happy with a high-latency 25/3 Mbps satellite broadband service if their only other choice is 4/1 Mbps DSL service or 56 kbps dial-up modems. The comparison for purposes of the RDOF, in contrast, would be much faster

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[25] *Cf.*, https://www.hughesnet.com/frequently-asked-questions:

> Unlimited Data: All plans have No Hard Data Limits. If you exceed the amount of data in your plan, we won't cut you off or charge you more. Stay connected at reduced speeds.

[26] Hughes Comments at pp. 4-5 ("Not surprisingly, satellite broadband customers are just as satisfied as the customers of other types of broadband providers, and one leading satellite provider reports that a third of its current customer base had switched to its services from terrestrial broadband alternatives."); SES/O3b Comments at p. 4 ("The latency benchmarks proposed in the NPRM are arbitrary and would unjustly penalize satellite operators that provide the same services as terrestrial operators, with no perceivable difference in customers' experiences.").

and more robust broadband services. Moreover, the satellite providers' broad claims of the equivalency of GSO satellite and terrestrial broadband services ignore the critical differences caused by high latency on broadband services discussed above. In order to ensure that the reverse auction maximizes the value of the services to be supported, and not simply minimizes the subsidies paid, the Commission needs to apply the higher weights proposed by ADTRAN to high-latency services.

Viasat contends that it would be arbitrary and capricious for the Commission to apply significant weights to high-latency services when the Commission does not apply any weight to other factors, including latency, jitter, and packet loss, that can affect the performance of certain online applications.[27] ADTRAN acknowledges that other characteristics of broadband service will affect the customer experience. To address those other factors -- as part of the performance measurement and enforcement program -- the Commission can insist upon quality characteristics for the subsidized broadband service in addition to speed and latency. But those factors can be addressed and resolved by the broadband service provider if any problems arise. In contrast, a GEO satellite broadband service provider cannot overcome the laws of physics – there will inevitably be significant delays as the signals travel back and forth to the satellite, some 22,300 miles from the Earth's surface. Thus, it makes perfect sense to add a weight to the reverse auction for high-latency service, because that is not correctable, and thus is inherent in the service, while not adding a weight for the other quality characteristics, which can be corrected.[28]

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[27] Viasat Comments at pp. 13-15.

[28] SES/O3b raises an issue with regard to Medium Earth Orbit ("MEO") satellites, which exhibit latency above the 100 ms threshold for low-latency services, but below the 750 ms ceiling for high-latency services. SES/O3b Comments at p. 3. To the extent that broadband service providers might want to use O3b's MEO satellite constellations for middle mile or backhaul service, then the Commission could create a medium tier latency weight for latency between 100 ms and 200 ms. ADTRAN would suggest in that case that the Commission assign a

Several of the satellite service providers also claim that the Commission's weighting of high-latency services is not technology neutral.[29] To the contrary, ADTRAN believes it would be inconsistent with the goal of technological neutrality to ignore the significant differences between high-latency and low-latency broadband services.[30] And as explained previously, the high-latency services have significant drawbacks due to their inability to support critical services and applications.

SES/O3b in its comments urges the Commission to rely on ITU standards:

> If the Commission decides to establish a latency benchmark, it should rely on industry-accepted standards, such as the range that the International Telecommunication Union ("ITU") has recognized as providing high user ratings for real-time applications.[31]

ADTRAN agrees that the Commission should base its criteria on accepted international

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weight of 20 to a new middle tier latency, assuming it will be assigning a weight of 40 (or 50 as suggested by ADTRAN) to the high-latency tier.

[29] Viasat Comments at pp. 21-24; Pacific Dataport Comments at pp. 5-6.

[30] *Cf., MCI Telecommunications Corporation v. FCC*, 17 F.2d 30, 39 (D.C. Cir. 1990), which discussed the "functional equivalency" test for determining whether services were "like":

> As the FCC noted in its *April 18 Order,* likeness within the meaning of Section 202(a) turns upon the "functional equivalency" test, which "focuses on whether the services in question are `different in any material functional respect.'" *Ad Hoc,* 680 F.2d at 795 (*quoting American Trucking Ass'n v. FCC,* 377 F.2d 121, 127 (D.C.Cir.1966), *cert. denied,* 386 U.S. 943, 87 S.Ct. 973, 17 L.Ed.2d 874 (1967)).

*The Competitive Telecommunications Association v. FCC*, 998 F.2d 1058, 1062 (D.C. Cir. 1993):

> An unreasonable "discrimination in charges," that is, can come in the form of a lower price for an equivalent service or in the form of an enhanced service for an equivalent price.

[31] SES/O3b Comments at p. 4, citing ITU-T, "International telephone connections and circuits – General Recommendations on the transmission quality for an entire international telephone connection," Recommendation G.114, https://www.itu.int/rec/T-REC-G.114-200305-I/en, May 2003 ("Recommendation G.114").

standards. ADTRAN further believes that the Commission has done so in its determination that 100 ms is an appropriate threshold for the access portion of low latency services. In fact, ITU-T Recommendation G.114 (cited by SES/O3b) provides excellent justification for such a determination if read in its entirety, as opposed to just "cherry picking" numbers.

As the Introduction section of G.114 indicates:

> Highly interactive tasks (e.g., some speech, video conferencing and interactive data applications) may be affected by delays below 100 ms, as per test result documented in Annex B of previous versions of ITU-T Rec. G.114." For this reason, previous versions of this Recommendation noted that if delays were kept below 150 ms, then most applications would not be significantly affected. Additionally, an upper limit of 400 ms for network planning purposes was always a part of ITU-T Rec. G.114. However, this parallel treatment of network delays on one hand, with application ("mouth-to-ear") level delays on the other hand, led to confusion in how ITU-T Rec. G.114 should be applied.

G.114 notes the duality between the latency required for highly interactive tasks (below 150 ms for "mouth-to-ear") and the realities of global network design at several points in the Recommendation, so it is worth examining these references in some detail:

- Interactive tasks, such as interactive voice, video, and gaming, are affected by "mouth-to-ear" delays of 150 ms or more. Note that this measurement is "mouth-to-ear," which encompasses every aspect of the end-to-end connection. It includes encoding, processing, and buffering delays in both the transmitter and the receiver, as well as the full end-to-end propagation and queueing delays encountered in the network path.

- In section A.2.2, the delay attributable to codec-related processing in a mobile or wireless environment is estimated as:
  3 × frame size + look-ahead + air interface framing
  Considering that the frame sizes used for voice are typically 10 to 20 ms long and that look-ahead is typically one frame, this means that codec-related delays account for 40 to 80 ms, not counting additional air interface framing.

- Once the above codec-related delays are accounted for, the remaining delay budget is at most 110 ms, which includes end-to-end propagation and queueing delays over and above those delays imposed by the access network. When seen in this light, a threshold of 100 ms in the access network seems, if anything, generous.

- Finally, the 400 ms value quoted by SES is never cited in G.114 as a desirable threshold, but rather as a nod to the physical reality that the speed of light imposes an unavoidable

> delay on the longest connections in global communications networks. This is explained thoroughly in Appendix II, which notes in the penultimate paragraph: "Whilst delays in the mid-200 ms range may not be a serious problem for long inter-regional calls, where users expect calls to be somewhat different from regional calls, ***it is critical that network planners do not allow local and regional calls to encounter such delays*** because user expectations are that such calls be completely delay-transparent." (emphasis added)

In sum, the Commission's proposal is consistent with the ITU standard cited by SES/O3b.

***Miscellaneous Issues***

ADTRAN also wants to address briefly a few additional miscellaneous issues raised in the comments of some of the other parties. Several commenters urge the Commission to eliminate the requirement that the broadband service provider offer a stand-alone voice service.[32] However, a stand-alone voice service meets the criteria for subsidization under the universal service provisions of the Telecommunications Act,[33] and thus must be provided by the subsidized service provider in order to be an Eligible Telecommunications Carrier.[34] Moreover, particularly given the fact that there are still a large number of residents that choose not to subscribe to broadband service, even when it is available, and in light of the importance of voice service to such customers for maintaining connectivity (as well as access to E911), it would not be in the public interest to eliminate the requirement that a broadband service provider offer a stand-alone voice service in order to be eligible for RDOF funding.

SpaceX suggests that the Commission should consider a phased release of the RDOF subsidies in multiple tranches, rather than in the two phases proposed in the *RDOF NPRM*.[35]

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[32] SpaceX Comments at pp. 3-6; WISPA at p. 10; Pacific Dataport Comments at p. 14.

[33] 47 U.S.C. § 254(c).

[34] 47 U.S.C. §214(e)(1)(a).

[35] SpaceX Comments at p. 8.

ADTRAN disagrees with SpaceX's proposal to delay some portion of the RDOF awards in order to accommodate the potential for subsequent deployment of low-Earth orbit satellite systems that might be able to provide broadband service to unserved or underserved areas. While such satellite systems in theory are very promising, there can be lengthy delays before any such systems are launched and become operational, assuming they get off the drawing board at all.[36] The unserved and underserved rural customers should not have to wait even longer for availability of robust broadband service.

SpaceX also asks the Commission (i) to clarify how it intends to enforce compliance with increased usage allowances (which are keyed to median usage), and then (ii) give the service provider two years to comply with the increased usage allowance obligation.[37] ADTRAN agrees that the Commission should provide clarity with regard to determining and enforcing increased usage allowances. And ADTRAN believes that the RDOF recipients should be afforded a

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[36] *E.g.*, Letter from Mark A. Grannis to Marlene H. Dortch, File No. SAT-LOA-19970926-00146, dated May 23, 2003, voluntarily requesting dismissal of its applications. SpaceX has reported losing contact with 5% of the pilot plane of satellites for its constellation. https://spacenews.com/contact-lost-with-three-starlink-satellites-other-57-healthy/ . And OneWeb experienced delays with the initial launch of satellites for its constellation. https://techcrunch.com/2019/02/27/watch-onewebs-first-six-global-internet-satellites-launch-today/ ("OneWeb has faced numerous delays; the whole constellation was originally planned to be in place by the end of 2019, which is impossible at this point. But delays are the name of the game in ambitious space-based businesses, and OneWeb hasn't been just procrastinating — it has been girding itself for mass production, raising funds to set up launch contracts and improving the satellites themselves.").

[37] SpaceX Comments at pp. 7-8:

> SpaceX suggests that the Commission require a technologically neutral method that ensures all support recipients can anticipate, engineer to and build to significant increases in usage. SpaceX proposes that, once average usage reaches a level at which it is expected to exceed 2 TB within one year, recipients have 6 months to report to the Commission their plans to meet U.S. average usage above 2 TB. The Commission should then provide a safe harbor from enforcement for two years after the U.S. average exceeds 2 TB to allow recipients to come into compliance with their plans.

reasonable amount of time to come into compliance with increased allowances.[38] However, ADTRAN believes that the service providers should not need two years to upgrade their infrastructure to accommodate an increased usage allowance. Knowing of this obligation, the broadband service providers should design their networks to be scalable so as to accommodate increased usage allowances. Moreover, the service providers will be able to monitor usage trends and forecasts, and thus should be able to anticipate the extent to which increases in the median usage is likely to trigger greater usage allowances. ADTRAN therefore believes that a reasonable period of time to become compliant should be no more than six months.

Viasat claims that failing to consider satellite broadband to be an unsubsidized competitor distorts the marketplace:

> For example, the subsidization of a terrestrial competitor in a given area may discourage a satellite provider from incurring the substantial costs of deploying additional capacity to that area—thereby turning a market that may well have grown more competitive over time into a market where the terrestrial provider is increasingly dominant.[39]

ADTRAN has several concerns with this contention. As an initial matter, it is far from clear that satellite broadband service is "unsubsidized." While direct federal subsidies have been limited so far (with Viasat having been awarded CAF II funding, and some BIP funding has been awarded to satellite providers[40]), the satellite system capacity being subsidized is not just

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38 *Cf.*, WISPA Comments at p. 13:

> To address the situation where the median (or average) exceeds the benchmark, the Commission should afford RDOF recipients a reasonable period of time to upgrade their networks. The additional time stemming from increasing data usage beyond the control of RDOF recipients should not be counted against the relevant buildout milestone or be subject to enforcement.

39 Viasat Comments at pp. 10-11.

40 *E.g.*, https://eligibility.sc.egov.usda.gov/eligibility/welcomeAction.do?pageAction=GetSatRules&NavKey=loan%4022.

targeted to the subsidized territories, but instead affects a broader footprint. Moreover, the Commission has been precluded from auctioning satellite service licenses, providing somewhat of a broader subsidy to the satellite systems in the form of lower costs than terrestrial broadband service providers using licensed spectrum who were required to pay for that spectrum.[41]

The satellite footprints cover both thinly-populated and densely-populated areas. That coverage means that there is little or no cost to deploy additional capacity to a particular area (other than the lost opportunity cost of the higher revenues that may be available outside of the areas where the Commission limits the prices the satellite broadband service provider can charge under the CAF or RDOF programs[42]), unless and until the satellite service provider needs to deploy one or more additional satellites. Thus, the direct and indirect subsidies to satellite service providers "spill over" into other non-targeted areas, thereby potentially distorting competition in these other areas ***in favor of the satellite service providers***.

Viasat also suggests that the Commission should permit RDOF applicants to use a mix of high-latency satellite and other low-latency technologies so that the provider could qualify for the low-latency tier if they route latency-sensitive traffic over routes that meet the 100 ms specification.[43] While an interesting theoretical concept, Viasat provides no explanation of how

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[41] Section 647 of the Open-market Reorganization for the Betterment of International Telecommunications Act (ORBIT Act), Pub. L. No. 106-180, § 647, 114 Stat. 48 (2000) (codified at 47 U.S.C. § 765f); *Northpoint Technology, Ltd. V. FCC*, 412 F.3d 145 (D.C. Cir. 2005). This distortion of subsidizing satellite service providers may be further exacerbated to the extent the Commission adopts the proposal to allow C-band satellite system licensees to auction off part of that spectrum to terrestrial systems and keep the proceeds of that private auction. *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, 33 FCC Rcd 6915 (2018).

[42] But as the Commission noted in the *RDOF NPRM*, those same factors provide satellite service providers with incentives to focus their capacity on non-RDOF customers who would typically pay higher prices and have lower usage caps. *RDOF NPRM* at ¶ 40.

[43] Viasat Comments at pp. 25-27. Sacred Wind also suggested that the Commission should allow RDOF providers to use a mix of satellite and terrestrial technologies, presumably without

such a hybrid approach would be able to discern the nature of the traffic and reliably divert the appropriate traffic to low-latency routing. Nor does Viasat explain why the low-latency network would be designed so as to lack capacity to carry all of the traffic. Without a more detailed description of exactly how such a hybrid system would work, the Commission should not try to create rules to accommodate this Viasat proposal.

Finally, Pacific Dataport "urges the Commission to modify its requirements and rules (e.g., severity of the penalty for high-latency, suitability of HTS Systems for high-speed middle mile, elimination of the facilities-based, standalone residential voice requirement, etc.) to allow new solutions that would enable the achievement of its rural broadband goals for a fraction of the cost, and years if not decades, faster."[44] Pacific Dataport is focusing on the Alaska market. And to the extent there are unique aspects to providing broadband service in Alaska, the RDOF program more broadly should not be designed to accommodate those characteristics. The Commission has already indicated it will separately address very high cost areas in the Remote Area Fund,[45] and Pacific Dataport's concerns can be addressed in that context.

## *CONCLUSION*

In its initial comments, ADTRAN urged the Commission to ensure that the RDOF subsidies bring the best value, not simply award the funds to entities promising the lowest price for presently acceptable service. The proposed weighting of the different service tiers and latencies, with the modifications proposed by ADTRAN, should accomplish that goal. In

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being penalized for high-latency if only 20% or less of those customers are served by satellite. Sacred Wind Comments at p. 3.

[44] Pacific Dataport Comments at p. 14.

[45] *Connect America Fund et al*., WC Docket No. 10-90 *et al.,* 26 FCC Rcd 17663 (2011) at ¶¶ 533-34.

addition, ADTRAN suggested the Commission reinforce the proposed measurement and enforcement regimes by adding crowdsourcing and whistleblower incentives to ensure that the subsidy recipients live up to their obligations. Other commenters concur with ORBCOMM on the need to maximize value and strengthen the enforcement program. While some satellite service providers proposed reducing the weight assigned to high-latency services, ADTRAN has explained why the Commission should reject those entreaties. ADTRAN thus continues to believe that the public interest would best be served by adopting the proposals in the *RDOF NPRM*, with ADTRAN's suggested modifications.

Respectfully submitted,

ADTRAN, Inc.

By: ____/s/_____
Stephen L. Goodman
Stephen L. Goodman, PLLC
532 North Pitt Street
Alexandria, VA 22314
(202) 607-6756
stephenlgoodman@aol.com

Counsel for ADTRAN, Inc.

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